

AMENDMENTS TO THE CLAIMS

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1: (Currently Amended) A method comprising:

evaluating the usage by a first of a plurality of virtual machines of each of a plurality of physical resources, including at least one of an input device, a display device, and a communication device, to which access is controlled by a virtual machine monitor; and

reallocating only a subset of the plurality of physical resources to the first virtual machine based, at least in part, on the evaluated usage, the subset including at least one of the input device, the display device, and the communication device.

2: (Currently Amended) The method of claim 1, further including:

monitoring the usage by a second of the plurality of virtual machines of at least one of the plurality of physical resources.

3: (Previously Presented) The method of claim 1, wherein monitoring the usage includes monitoring the mapping of a virtual resource to a physical resource.

4: (Currently Amended) The method of claim 1, wherein monitoring the usage includes:

monitoring the usage substantially in parallel with executing the virtual machine.

5: (Previously Presented) The method of claim 1, wherein reallocating only a subset of the plurality of physical resources to the first virtual machine based, at least in part, on the evaluated usage includes:

either increasing or decreasing the ability of the first virtual machine to access one of the plurality of physical resources.

6: (Currently Amended) The method of claim 5, wherein reallocating only a subset of the plurality of physical resources to the first virtual machine includes:

increasing the ability of the first virtual machine to access a first physical resource; and

decreasing the ability of the first virtual machine to access a second physical resource.

7: (Previously Presented) The method of claim 2, wherein reallocating only a subset of the plurality of physical resources to the first virtual machine includes a reallocation selected from a group including the following:

altering the order in which the first virtual machine and the second virtual machine are executed,

swapping between the first and second virtual machines,

assigning core affinity to one of the first virtual machine and the second virtual machine,

assigning a processor affinity to one of the first virtual machine and the second virtual machine, and

altering the time quanta assigned to at least one of the first virtual machine and the second virtual machine.

8: (Previously Presented) The method of claim 1, wherein reallocating only a subset of the plurality of physical resources to the first virtual machine is performed by the virtual machine monitor having a resource manager to evaluate the first virtual machine activity.

9: (Original) The method of claim 8, wherein the resource manager is a part of an integrated circuit.

10: (Previously Presented) The method of claim 1, wherein evaluating the usage includes:

determining whether the activity of the first virtual machine is sufficient to trigger a change in the resource allocation;

suggesting a resource allocation; and

determining whether the suggested resource allocation negatively impacts the performance of another virtual machine.

11: (Currently Amended) An article comprising:

a storage medium having a plurality of machine accessible instructions, wherein when the instructions are executed, the instructions provide for:

evaluating the activity of usage by one or more virtual machines, ~~the activity~~

including usage of one or more physical resources, including at least one of an input device, a display device, and a communication device, to which access is controlled by a virtual machine monitor; and

reallocating only a subset of the physical resources to the virtual machine(s) based, at least in part, on the evaluated activity usage, the subset including at least one of the input device, the display device, and the communication device.

12: (Original) The article of claim 11, further including instructions providing for:

monitoring the activity of one or more virtual machines.

13: (Original) The article of claim 12, wherein the instructions providing for monitoring the activity of one or more virtual machines includes instructions providing for monitoring an activity selecting from a group including:

interrupt usage,

processor usage,

network usage,

disk usage, and

whether the virtual machine is performing a time-critical task.

14: (Original) The article of claim 12, wherein the instructions providing for monitoring the activity of one or more virtual machines includes instructions providing for:

monitoring the activity of the virtual machine substantially in parallel with executing the virtual machine.

15: (Original) The article of claim 11, wherein the instructions providing for reallocating physical resources to the virtual machine(s) based, at least in part, on the evaluated activity includes instructions providing for:

either increasing or decreasing the ability of the virtual machine(s) to access to a physical resource.

16: (Original) The article of claim 15, wherein the instructions providing for reallocating physical resources to the virtual machine(s) includes instructions providing for:

increasing the ability of the virtual machine(s) to access to a first physical resource; and

decreasing the ability of the virtual machine(s) to access to a second physical resource.

17: (Original) The article of claim 15, wherein the instructions providing for reallocating physical resources to the virtual machine(s) includes a reallocation selected from a group including the following:

altering the order in which the virtual machine(s) are executed,
swapping between virtual machines,

assigning core affinity to a virtual machine,
assigning a processor affinity to a virtual machine, and
altering the time quanta assigned to the virtual machine(s).

18: (Previously Presented) The article of claim 11, wherein the instructions providing for reallocating physical resources to the virtual machine(s) are performed by the virtual machine monitor having a resource manager to evaluate the virtual machine(s) activity.

19: (Original) The article of claim 18, wherein the resource manager is a part of an integrated circuit.

20: (Original) The article of claim 11, wherein the instructions providing for evaluating the activity of one or more virtual machines includes instructions providing for:

determining whether the activity of the virtual machine(s) is sufficient to trigger a change in the resource allocation;
suggesting a resource allocation; and
determining whether the suggested resource allocation negatively impacts the performance of another virtual machine.

21. (Currently Amended) An apparatus comprising:

a plurality of physical resources, including at least one of an input device, a display device, and a communication device;

a plurality of virtual machines, capable of sharing the plurality of physical resources;

an activity monitor, capable of monitoring the activity of usage by the virtual machines, the activity including usage of the plurality of physical resources;

a virtual machine manager, capable of managing the virtual machines and reallocating access to a subset of the physical resources amongst the virtual machines, based at least in part on the monitored activity usage, the subset including at least one of the input device, the communication device, and the display device.

22. (Original) The apparatus of claim 21, wherein the virtual machine monitor includes a resource manager that is capable of reallocating access to the physical resources amongst the virtual machines.

23. (Original) The apparatus of claim 21, wherein the activity monitor is capable of monitoring an activity selected from a group including:

interrupt usage,

processor usage,

network usage,

disk usage, and

whether the virtual machine is performing a time-critical task.

24. (Original) The apparatus of claim 23, wherein the activity monitor is capable of monitoring the activity of the virtual machines substantially in parallel with the execution of the virtual machines.

25. (Original) The apparatus of claim 21, wherein the virtual machine monitor is capable of either increasing or decreasing the ability of the virtual machine(s) to access to a physical resource.

26: (Original) The apparatus of claim 25, wherein the virtual machine monitor is capable of reallocating physical resources to the virtual machine(s) via:

increasing the ability of the virtual machine(s) to access to a first physical resource; and

decreasing the ability of the virtual machine(s) to access to a second physical resource.

27: (Original) The apparatus of claim 25, wherein the virtual machine monitor is capable of reallocating physical resources to the virtual machine(s) by selecting from a group including the following:

altering the order in which the virtual machine(s) are executed,

swapping between virtual machines,

assigning core affinity to a virtual machine,

assigning a processor affinity to a virtual machine, and
altering the time quanta assigned to the virtual machine(s).

28: (Original) The apparatus of claim 22, wherein the resource manager is further capable of evaluating the monitored activity of the virtual machine(s).

29: (Previously Presented) The apparatus of claim 28, wherein the resource manager is capable of evaluating the monitored activity of the virtual machine by:
determining whether the activity of the virtual machine(s) is sufficient to trigger a change in the resource allocation;
suggesting a resource allocation; and
determining whether the suggested resource allocation negatively impacts the performance of another virtual machine.

30: (Original) The apparatus of claim 29, wherein the activity monitor and virtual machine monitor are integrated into the same circuit.

31. (Currently Amended) A system comprising:
a plurality of physical resources, including at least one of an input device, a display device, and a communication device;
a plurality of virtual machines, capable of sharing access to the plurality of physical resources;

an activity monitor, capable of monitoring the activity of usage by the virtual machines, the activity including usage of the plurality of physical resources; a virtual machine manager, capable of managing the virtual machines and reallocating access to only a subset of the physical resources amongst the virtual machines, based at least in part on the monitored activity usage, the subset including at least one of the input device, the display device, and the communication device.

32. (Original) The system of claim 31, wherein the virtual machine monitor includes a resource manager that is capable of reallocating access to the physical resources amongst the virtual machines.

33. (Original) The system of claim 31, wherein the activity monitor is capable of monitoring an activity selected from a group including:

interrupt usage,

processor usage,

network usage,

disk usage, and

whether the virtual machine is performing a time-critical task.

34. (Original) The system of claim 33, wherein the activity monitor is capable of monitoring the activity of the virtual machines substantially in parallel with the execution of the virtual machines.

35. (Original) The system of claim 31, wherein the virtual machine monitor is capable of either increasing or decreasing the ability of the virtual machine(s) to access to a physical resource.

36: (Original) The system of claim 35, wherein the virtual machine monitor is capable of reallocating physical resources to the virtual machine(s) via:

increasing the ability of the virtual machine(s) to access to a first physical resource; and

decreasing the ability of the virtual machine(s) to access to a second physical resource.

37: (Original) The system of claim 35, wherein the virtual machine monitor is capable of reallocating physical resources to the virtual machine(s) by selecting from a group including the following:

altering the order in which the virtual machine(s) are executed,
swapping between virtual machines,
assigning core affinity to a virtual machine,
assigning a processor affinity to a virtual machine, and
altering the time quanta assigned to the virtual machine(s).

38: (Original) The system of claim 32, wherein the resource manager is further capable of evaluating the monitored activity of the virtual machine(s).

39: (Previously Presented) The system of claim 38, wherein the resource manager is capable of evaluating the monitored activity of the virtual machine by:

 determining whether the activity of the virtual machine(s) is sufficient to trigger a change in the resource allocation;

 suggesting a resource allocation; and

 determining whether the suggested resource allocation negatively impacts the performance of another virtual machine.

40: (Original) The system of claim 39, wherein the activity monitor and virtual machine monitor are integrated into the same circuit.

41: (New) A method comprising:

 evaluating the usage by a virtual machine of each of a plurality of resources, including at least processing capability, to which access is controlled by a virtual machine monitor; and

 reallocating only a portion of the processing capability to the virtual machine based, at least in part, on the evaluated usage.

42: (New) The method of claim 41, wherein reallocating includes establishing affinity between the virtual machine and one of a processor and a core.

43: (New) The method of claim 41, wherein the portion is a portion of processor time.